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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/152,593	09/14/1998	HIROSHI HASEGAWA	BA-22624	9416

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BUCKNAM AND ARCHER
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ROSLYN, NY 11576

EXAMINER

DIAMOND, ALAN D

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/152,593

Applicant(s)

HASEGAWA ET AL.

Examiner

Alan Diamond

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 07/634,054.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 15.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Comments

1. Prosecution is hereby resumed for the instant application.
2. The terminal disclaimer filed October 4, 1999 has overcome the provisional obviousness-type double patenting rejection over serial No. 09/187,320.
3. It should be noted that the instant claims have been afforded a filing date of September 14, 1998, i.e., the filing date of the instant continuation-in-part application. This is due to the fact that the instant claims are missing limitations that the Examiner deems are required (essential) limitations in the instant parent applications. Furthermore, the instant claims contain limitations that are not supported by the instant parent applications. The instant claims lack a recitation that the refrigerator consists of as a base oil the recited pentaerythriol ester; the instant claims also lack a recitation that the number of straight-chain alkyl groups is present in a concentration of not more than 60% of the total number of alkyl groups. The instant claims recite alkylglycidyl ether epoxy compounds, aryloxirane compounds, alkyloxirane compounds, and alicyclic epoxy compounds that are all not supported by the originally filed parent applications (with the exception of 08/539,001, which does recite them).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishida et al, U.S. Patent 5,447,647. Ishida et al's Base oils 3 and 4 read on the instant pentaerythritol ester and are used in a fluid composition containing the instant refrigerant and can contain the instant additives (see col. 4, line 46 through col. 9, line 45). Since Ishida et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

6. Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kamakura et al, U.S. Patent 5,620,950.

In Table 1 at col. 6, Kamakura et al's lubricated refrigerant composition examples using base oil No. 8 and Sample additive Nos. 1, 2, 3, and 4, read on the instant fluid composition. In particular, the base oil No. 8 is a full ester of a mixture of 2-methylbutanoic acid and hexanoic acid. Said additives 1, 2, 3, and 4 are alicyclic epoxy compounds, and are present at a concentration of 3% by weight (see col. 4, lines 30-65; and Table 1). It should also be noted that the comparative Examples in Table 1 which use said base oil No. 8 along with additives 5 and 6 also read on the instant fluid composition. Additive 5 is phenylglycidyl ether and additive 6 is epoxylated soybean oil (see col. 5, lines 1-6). Invention Product Nos. 5 through 10 in Table 4 also read on the instant fluid composition. Kamakura et al's composition can also contain an extreme pressure agent, such as tricresyl phosphate (instant phosphorus compound); and antioxidants, such as α -naphthylbenzylamine and phenothiazine. Since Kamakura et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

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7. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 448402 A2, herein referred to as EP '402.

EP '402's R134a refrigerant lubricant compositions in Examples 1-3 and 5-13 in Table 2, containing 15 parts by weight of refrigerator lubricant and 85 parts by weight of R134a read on the instant fluid composition. Note that each of base oil samples 1-3 at page 4, lines 19-41, read on the instant pentaerythritol ester of formula (1). The epoxy compounds used in said Examples 1-3 and 5-13 are at a concentration of 0.3, 3, or 5 percent by weight, and are alkyl glycidyl ether epoxy compounds (i.e., epoxy compound samples 8-12), phenyl glycidyl ether (epoxy compound sample 13), or cresyl glycidyl ether (epoxy compound sample 14) (see page 5, lines 27-53). The refrigerant lubricant composition can additionally contain a known lubricant for a refrigerant, such as mineral oil or alkylbenzene oil (see page 3, lines 55-57). Furthermore, the refrigerant lubricant composition can contain tricresyl phosphate (which is an extreme pressure agent), phosphorous esters such as triethyl phosphite; and antioxidants, such as naphthylbenzylamine and phenothiazine (see the paragraph bridging pages 3 and 4). Since EP '402 teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 1, 3, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamakura et al, U.S. Patent 5,620,950.

In Table 1 at col. 6, Kamakura et al's lubricated refrigerant composition examples using base oil No. 8 and Sample additive Nos. 1, 2, 3, and 4, read on the instant fluid composition. In particular, the base oil No. 8 is a full ester of a mixture of 2-methylbutanoic acid and hexanoic acid. Said additives 1, 2, 3, and 4 are alicyclic epoxy compounds, and are present at a concentration of 3% by weight (see col. 4, lines 30-65; and Table 1). It should also be noted that the comparative Examples in Table 1 which use said base oil No. 8 along with additives 5 and 6 also read on the instant fluid composition. Additive 5 is phenylglycidyl ether and additive 6 is epoxylated soybean oil (see col. 5, lines 1-6). Invention Product Nos. 5 through 10 in Table 4 also read on the instant fluid composition. Kamakura et al's composition can also contain an extreme pressure agent, such as tricresyl phosphate (instant phosphorus compound); and antioxidants, such as α -naphthylbenzylamine and phenothiazine. Kamakura et al teaches the limitations of the instant claims other than the difference which is discussed below.

Kamakura et al does not specifically teach using, in its lubricated refrigerant composition, a mixture of its tricresyl phosphate extreme pressure agent and its antioxidant such as the α -naphthylbenzylamine or phenothiazine. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a mixture of the tricresyl phosphate extreme pressure agent and the antioxidant, such as the α -naphthylbenzylamine or phenothiazine, so as to provide

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Kamakura et al's lubricated refrigerant composition with both extreme pressure and antioxidant properties.

10. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over by EP 448402 A2, herein referred to as EP '402.

EP '402's R134a refrigerant lubricant compositions in Examples 1-3 and 5-13 in Table 2, containing 15 parts by weight of refrigerator lubricant and 85 parts by weight of R134a are pertinent to the instant fluid composition. Note that each of base oil samples 1-3 at page 4, lines 19-41, read on the instant pentaerythritol ester of formula (1). The epoxy compounds used in said Examples 1-3 and 5-13 are at a concentration of 0.3, 3, or 5 percent by weight, and are alkyl glycidyl ether epoxy compounds (i.e., epoxy compound samples 8-12), phenyl glycidyl ether (epoxy compound sample 13), or cresyl glycidyl ether (epoxy compound sample 14) (see page 5, lines 27-53). The refrigerant lubricant composition can additionally contain a known lubricant for a refrigerant, such as mineral oil or alkylbenzene oil (see page 3, lines 55-57). Furthermore, the refrigerant lubricant composition can contain tricresyl phosphate (which is an extreme pressure agent), phosphorous esters such as triethyl phosphite; and antioxidants, such as naphthylbenzylamine and phenothiazine (see the paragraph bridging pages 3 and 4). EP '402 teaches the limitations of the instant claims other than the difference which is discussed below.

EP '402 does not specifically teach preparing its refrigerant lubricant composition with a combination of the additives that it teaches. For example, EP '402 does not provide a specific example where a combination of a known lubricant, such as mineral

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oil or alkylbenzene oil; the tricresyl phosphate or triethyl phosphite; and an antioxidant, such as naphthylbenzylamine and phenothiazine, are used. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the additives taught by EP '402, such as a combination of a known lubricant, such as mineral oil or alkylbenzene oil; the tricresyl phosphate or triethyl phosphite; and an antioxidant, such as naphthylbenzylamine and phenothiazine, in EP '402's lubricant composition so as to take advantage of the attendant functions of each of the additives.

11. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 448402 A2, herein referred to as EP '402, in view of Kamakura et al, U.S. Patent 5,620,950.

EP '402's R134a refrigerant lubricant compositions in Examples 1-3 and 5-13 in Table 2, containing 15 parts by weight of refrigerator lubricant and 85 parts by weight of R134a are pertinent to the instant fluid composition. Note that each of base oil samples 1-3 at page 4, lines 19-41, read on the instant pentaerythritol ester of formula (1). The epoxy compounds used in said Examples 1-3 and 5-13 are at a concentration of 0.3, 3, or 5 percent by weight, and are alkyl glycidyl ether epoxy compounds (i.e., epoxy compound samples 8-12), phenyl glycidyl ether (epoxy compound sample 13), or cresyl glycidyl ether (epoxy compound sample 14) (see page 5, lines 27-53). EP '402 is not limited to these epoxy compounds, and teaches that any epoxy compound having at least one epoxy group in its molecule may be used (see page 3, line 40). The refrigerant lubricant composition can additionally contain a known lubricant for a refrigerant, such as mineral oil or alkylbenzene oil (see page 3, lines 55-57).

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Furthermore, the refrigerant lubricant composition can contain tricresyl phosphate (which is an extreme pressure agent), phosphorous esters such as triethyl phosphite; and antioxidants, such as naphthylbenzylamine and phenothiazine (see the paragraph bridging pages 3 and 4). EP '402 teaches the limitations of the instant claims other than the differences which are discussed below.

EP '402 does not specifically teach that its epoxy compound can be, for example, an alicyclic epoxy compound. Kamakura et al teaches alicyclic epoxy compound additives for refrigerant lubricant compositions, wherein the alicyclic epoxy compound provides the advantages of having good compatibility with R134a and the ability of reacting rapidly with free acids (see abstract; and the paragraph bridging cols. 1 and 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the alicyclic epoxy compound of Kamakura et al for the epoxy compound in EP '402's refrigerant lubricant composition because said alicyclic epoxy compound provides the advantages of good compatibility with R134a and the ability of reacting rapidly with free acids, as taught by Kamakura et al.

EP '402 does not specifically teach preparing its refrigerant lubricant composition with a combination of the additives that it teaches. For example, EP '402 does not provide a specific example where a combination of a known lubricant, such as mineral oil or alkylbenzene oil; the tricresyl phosphate or triethyl phosphite; and an antioxidant, such as naphthylbenzylamine and phenothiazine, are used. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the additives taught by EP '402, such as a combination of a known lubricant,

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such as mineral oil or alkylbenzene oil; the tricresyl phosphate or triethyl phosphite; and an antioxidant, such as naphthylbenzylamine and phenothiazine, in EP '402's lubricant composition so as to take advantage of the attendant functions of each of the additives.

12. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehler et al, U.S. Patent 5,021,179, in view of either Kohashi et al, Japanese Patent 62-292895 or Schmidt et al, German Patent 133966. The English translations of said Japanese Patent 62-292895 and German Patent 133966, which accompany the instant Office action, are referred to below.

Zehler et al teaches a fluid composition for use in refrigerators, wherein the composition contains a chlorine-free fluorocarbon refrigerant, such as R134a, and pentaerythritol/dipentaerythritol ester lubricants such as those shown in Table 2 (see abstract; col. 1, lines 6-12; col. 7, lines 7-45; and col. 9, lines 22-57). It is the Examiner's position that the pentaerythritol/dipentaerythritol ester in Zehler et al's Table 2 formed with 17% i-C₅, 33% n-C₅, and 50% i-C₉ reads on the instant formula (1). The composition can contain additives, such as phenol antioxidants, amine antioxidants, anti-wear and extreme pressure agents, lubricity additives, antifoaming agents, metal deactivators, etc (see col. 5, line 23 through col. 6, line 60). Examples of the anti-wear and extreme pressure agents include phosphate esters, alkyl acid phosphates, amine salts of phosphoric acid monohexyl ester, etc (see col. 6, lines 46-60). The composition can contain polybutene (i.e., a poly-alpha-olefin) (see col. 6, line 30). Zehler et al teaches the limitations of the instant claims other than the difference which is discussed below.

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Zehler et al does not specifically teach that its composition contains the instant epoxy compound. Kohashi et al teaches a glycidyl ester additive for polyvalent alcohol ester-based refrigerator oils, wherein the glycidyl ester suppresses the corrosion of metal components of the refrigerator apparatus and stabilizes the oil (see page 3, lines 12-36). Kohashi et al exemplifies pentaerythritol esters with 2-ethylhexanoic acid and lauric acid as the base oil (see Table 1 at page 6). The concentration of the glycidyl ester is 0.05 to 10 wt% (see page 3, lines 26-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added the glycidyl ester of Kohashi et al to the composition of Zehler et al because said glycidyl ester suppresses the corrosion of metal components of the refrigerator apparatus and stabilizes the oil (as taught by Kohashi et al); and Zehler et al specifically teaches that its composition can include additives, such as corrosion inhibitors.

Alternatively, Schmidt et al teaches that refrigerator oils can be stabilized by the addition 0.1 to 5.0% of oil-soluble epoxide compounds, such as epoxytetradecane, phenylglycidyl ether, isobutylglycidyl ether, and epoxidized soya oil (see English translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added Schmidt et al's epoxy compound to Zehler et al's composition because said epoxy compound will stabilize the oil (as taught by Schmidt et al); and Zehler et al specifically teaches that its refrigerator oil can include additives, such as anti-corrosion agents, antioxidants, etc.

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Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

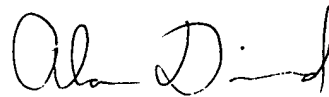
U.S. Patent 6,153,118 is a continuation in part of the instant application. There currently is no double patenting with the claims of this patent because the instant claims are "consists of" claims and thus, exclude the additional ester oil (i.e., in addition to the instant formula (1)) that is present in the claims of said patent.

U.S. Patent 6,582,621 has issued from parent application 08/539,001. U.S. Patents Re. 19,265 and 2,807,155 are hereby made of record.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 703-308-0840. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 703-308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
June 26, 2003